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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,022	01/27/2000	Jeffrey Skolnick	10886-045001	1668

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EXAMINER

CLOW, LORI A

ART UNIT PAPER NUMBER

1631

DATE MAILED: 01/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/493,022

Applicant(s)

SKOLNICK ET AL.

Examiner

Lori A. Clow, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 9-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 14-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_                      6) ☐ Other: .

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### **DETAILED ACTION**

Applicant's arguments have been considered and are not deemed entirely persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claim 1-23 are currently pending.

Applicant is requested to cancel claims 9-13, drawn to a non-elected invention.

### ***Drawings***

Applicant is hereby notified that the required timing for the correction of drawings has changed. See the last 6 lines on the sheet which is attached entitled "Attachment for PTO-948 (Rev. 03/01 or earlier)". Due to the above notification Applicant is required to submit drawing corrections within the time period set for responding to this Office action. Failure to respond to this requirement may result in abandonment of the instant application or a notice of a failure to fully respond to this Office action.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 and 14-23 rejected under 35 U.S.C. 102(a) as being anticipated by Kolinski et al. (Proceedings of HRCL Workshop on Monte Carlo Approach to Biopolymers and Protein Folding. P. Grassberger et al., Eds., World Scientific, Singapore/London, pages 100-130).

Kolinski et al. disclose an efficient reduced model of protein structure, interaction, and dynamics. The model employs a high coordination lattice representation of protein conformational space in which side chains are treated in an explicit way (see abstract, page 100). The method involves a computer-assisted method for determining three-dimensional structures of target amino acid sequences by utilization of the MONSTER algorithm, as described in the specification of the instant application. The centers of mass of side chains of proteins serve as interaction centers (page 114, section 4). Alignments are comprised of these representations and a protein model is output to a device, as required by the steps of claim 1 and 14. In more detailed embodiments, the paper discloses the exact method to convert representations of side chains of amino acids residues to interaction centers that are represented by a pseudoatom. The interaction centers are then projected onto an underlying cubic lattice to produce a projected chain (see lattice discussion, section 3; see details of section 5). Furthermore, secondary and tertiary constraints are applied to the data (section 7). Also within the methods of the paper are requirements for lowest energy conformation of a target protein (see page 122, last paragraph), meeting further limitations in the claims (i.e. claim 4). The entire process described by Kolinski et al. meet all requirements of the instant claims.

Claims 1-8 and 14-23 rejected under 35 U.S.C. 102(a) as being anticipated by Kolinski et al. (J. Phys. Chem. (1998) Vol. 102, pages 4628-4637).

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Kolinski et al. have incorporated the idea of side chain representation into computer modeling techniques for protein structure. Again, the lattice chains of centers of mass of side chains is employed which utilizes the Monte Carlo simulation to represent the three-dimensional structure of a target amino acids (see page 4629, section 2), as disclosed in Kolinski et al. (see above; Proceedings of HRCL Workshop on Monte Carlo Approach to Biopolymers and Protein Folding. P. Grassberger et al., Eds., World Scientific, Singapore/London, pages 100-130)

Claims 1-8 and 14-23 rejected under 35 U.S.C. 102(a) as being anticipated by Oritz et al. (Proceedings of III-rd Pacific Symposium on Biocomputing (1998), Altman et al., Eds., World Scientific Pub., Singapore/London, pages 377-388).

Oritz et al. disclose a method that uses restraints derived from multiple sequence alignments combined with fold assembly algorithm to predict protein structure (see abstract). Figure 1 outlines the basis of the method and is virtually identical to figure 15 in the instant application. The paper describes the MONSSTER algorithm disclosed in the instant application (page 378, methods section) and describes the methods as listed above which encompass the embodiments of the instant application.

Claims 1-8 and 14-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Artymiuk (J. Mol. Bio. (1994) Vol. 243, pages 327-344).

Artymiuk et al. disclose a computer program called ASSAM that is designed to allow location of all occurrences of user-defined pattern of residues in all of the structures in the Protein Databank (PDB). The residues of interest in the target protein are defined in geometric terms using a simplified representation of the side-chain (page 328, column 2, paragraph 3), meeting the limitations of claims 1 and 14. Furthermore, the residues can be defined as

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individual amino acid types or as residues possessing particular properties, e.g. acidic, basic, hydrophobic, etc. In the generation of the graphic representation of the 3-D structures, positions of atoms in the side-chains are represented by a small number of pseudo-atoms (page 329, column 2, paragraph 1). In one embodiment of the program, a mid-point option can be searched such that the centers of mass of each side-chain of a hit must agree in relative three-dimensional position with the centers of mass of each side-chain in the pattern (page 337, paragraph 3).

No claims are allowed.


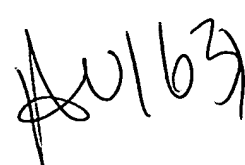
### Inquiries

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242, or (703) 308-4028.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lori A. Clow, Ph.D., whose telephone number is (703) 306-5439. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Woodward, Ph.D., can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Legal Instrument Examiner, Tina Plunkett, whose telephone number is (703) 305-3524, or to the Technical Center receptionist whose telephone number is (703) 308-0196.

  
**MARY K. ZEMAN**  
**PRIMARY EXAMINER**  


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December 26, 2002

Lori A. Clow, Ph.D.

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*Lori A. Clow*